



Food Science News

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Joanne Giles had served the department in many roles at the time of her retirement.



Beth Turner was a tireless contributor to the department during her thirty-two years.



Dr. Dwain Pilkington has provided expertise in the area of red meat.



Dr. Peggy Foegeding has had a high impact career as a food microbiologist.

Department Says Goodbye to Four Members of Food Science Family

The close of 1998 brought with it the retirement of four distinguished members of the Food Science Department.

Joanne Giles was the communication specialist for CAPPS at the time she retired, although she had served the department in many roles in her twenty years here. During her tenure, she worked, either full-time or temporary in every office in the building! She remembers these early years as a time when manuscripts were typed, and then completely retyped if there were changes. After working full-time as secretary for faculty in room 116, she became secretary for Dr. Victor Jones.

Beth Turner worked in the department for over thirty-two years when she retired in December. She started with the university in June 1966, & worked as a research analyst with three faculty members over the years: Drs. Tom Blumer, Jim Keeton and Duane Larick. She was a tireless contributor to the department through her involvement in a number of departmental committees, science teacher workshops, and classroom and 4H presentations. She was involved in the formation of the Food

Dr. Dwain H. Pilkington, a professor and red meat extension specialist, came to NC State in 1980 after a distinguished career in the meat processing industry. He earned a Master's degree in Animal Husbandry and a Ph.D. in Food Science at Oklahoma State University. While at NC State, he has developed educational programs, workshops, and short courses on processed red meat products, country hams, food safety, and quality control. He has assisted in training county ext-

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Fall Commencement

Graduation exercises were held on Wednesday, December 16, 1998 in Reynolds Coliseum. Food Science graduates were also honored in Schaub Hall following the university ceremony. Dr. James Oblinger, Dean of the College of Agriculture and Life Sciences, was the special guest speaker at the Food Science ceremony. Graduates were introduced by their faculty advisor and had the opportunity to introduce their family and friends.

The Graduates: Doctoral: *Cynthia Adcox, Liz Gwartney, Lisa Lucore*. M.S. degree: *Jill Brindisi, Angela Cauley, Denise Crowell, Nikki Drye, Carol Dombroski, Paz Etcheverry, Dana McElroy, Jamie Parker*. B.S. degree: *Renee Draughon, Jill Godfrey, Anne Haas, Heather Hickman, Ilana Kurts,*

Staci McNair, Jennifer Maygar, Jodie McKenna, Shavon Robbins, Robert Sessoms, Daniera Wilson and Kate Young. Agriculture Institute, Associate degree: *Jonathan McCain*.

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Retirees, continued

Joanne Giles . . .

Joanne flourished in this position, as she loved the student contact associated with Dr. Jones' position of graduate and undergraduate coordinator.

In 1986, Joanne became the first communication specialist for the Center for Aseptic Processing and Packaging Studies. Over the past 12 years, she has worked closely with Dr. Ken Swartzel, the managing director of the center.

Joanne and her husband, Les, who also retired recently, plan to spend time with their children and grandchildren, do some traveling, and she plans to do volunteer work.

Beth Turner . . .

Science Alumni Society, and coordinated the NC State Breakfast at IFT for several years. Beth is now working part time as a food scientist for the Raleigh office of Gannett Fleming, Inc., an engineering and planning company (environmental planning for agribusiness and food processors). They are planning a move to NCSU Centennial Campus in the spring.

Dwain Pilkington . . .

extension agents, worked with 4-H, judged cured meat and country ham championships, and presented meat cutting demonstrations. Dr. Pilkington's programs have received support from the NC Pork Producers Association, National Livestock and Meat Board, and the NC Agricultural Foundation. He is an honorary member of the NC Meat Processors Association, member of IFT, Phi Tau Sigma, Epsilon Sigma Phi, and is certified by the National Live Stock and Meat Board as a Meat Nutri-Facts Specialist.

IAC Spring Meeting Announced

The spring meeting of the Industry Advisory Council will be held on April 16 in Schaub Hall. The focus will be on soliciting the council's input on how the department can better prepare our students for careers in industry. The upcoming departmental review will also be a subject of discussion.

FS Product Development Teams

The FS club product development team is in full swing in preparing their submission for a knife-less fruit spread for toasted breads. The R&D class (FS 751) teams are competing to develop new snack-type products based on vegetables that will appeal to the average person, rather than health food consumers.

Peggy Foegeding

Friends, including former students, colleagues and administrators gathered in Schaub Hall on Thursday, February 11 to pay tribute to Dr. Peggy M. Foegeding. Dr. Foegeding, who has battled breast cancer for several years, decided last year to retire. In addition to a book of letters from friends and colleagues, she was presented the Order of the Long Leaf Pine by Dean Jim Oblinger on behalf of Governor Jim Hunt. The award is given to those who provide outstanding service or have made outstanding contributions to the state of North Carolina. There were also numerous contributions to the department's Campaign for Excellence in her honor (a campaign to raise \$1.5 million for a new food science teaching and training lab.)

Dr. Foegeding has had a high impact career at NC State in the Food Science Department as a food microbiologist. Her contributions to her field have been recognized by the many awards presented to her over the years. She was elected to the Academy of Microbiologists in 1994, and presented the IFT William V. Cruess Award for Outstanding Teaching and Advising. Also, that year, the Food Science Club presented her with their Outstanding Instructor Award. In 1989, she was given the Certificate of Distinguished Scholarly Achievement by NCSU, and received the Sigma Xi Research Award.

Dr. Foegeding has served as co-chair of two task forces convened by the Council for Agricultural Science and Technology (CAST) whose mission is to make recommendations relative to improving food safety in the U.S. and Worldwide. The first task force worked from 1991 to 1994, and resulted in the publication Foodborne Pathogens: Risks and Consequences. As a consequence of the report, Dr. Foegeding testified on May 25, 1994 before a U.S. House of Representatives subcommittee, and subsequently spoke at hearings on "Reinventing the Federal Food Safety System." The second task force worked throughout 1998 and the resulting report entitled Foodborne Pathogens: Review of Recommendations was issued in Washington D.C. in October. Dr. Foegeding participated in a press conference relative to the release, and a briefing in the White House.

Peggy and her husband, Dr. Allen Foegeding, also a member of the food science faculty, live in Raleigh and have two children.

MR. FIX-IT

by Sarah Winn

Jesse Brown came to work as a technician in the food processing laboratory in 1966. The lab was then located in the basement of Kilgore Hall and primarily under the direction of Dr. William Hoover. There, Jesse did a lot of freeze drying of fruits and osmotic drying of apples with various sugars.

When the lab moved to Schaub Hall several years later, the larger facility allowed for the introduction of more processing equipment and a shop where equipment could be made or modified. Some of the new equipment included early versions of a freeze-dryer and a microwave cooker.

As Dr. Hoover worked closely with food processors throughout the state, Jesse didn't spend all of his time in the laboratory. He worked in a plant in Williamston to develop pumpkin flakes and in Robersonville making honey coated and old-fashioned peanuts. In Taylorsville, he helped install a piece of equipment in an apple processing plant that later made Mrs. Smith's Pies®. He particularly liked that job, for after the plant was working, he could buy pies for about a dollar. He worked in a plant at Boone, that made V-8 juice out of sauerkraut juice and also at Mount Olive Pickle, where he helped install a continuous cooker for processing fresh pack pickles.

His work at White Lake on sweet potato patties, coincided closely with much of the work he did in the laboratory. Jesse assisted Dr. Hoover and Norm Miller in developing a drum drying process for sweet potatoes. He also did much of the work in obtaining the proper times and temperatures for canning sweet potatoes in different sized cans and for sliced and pureed product. After cooking sweet potatoes in the retort every day for over two months, enough information was

obtained to compile a book for use by National Canners.

After Dr. Hoover retired in 1982, Jesse continued in the food processing lab, under the direction of Dr. Dan Carroll, but his duties were expanded. Jesse's multiple talents and the shop facilities were made available to the entire department. Whenever equipment needed to be repaired or modified, most sought Jesse's advice first. He built bookshelves for most of the professors and many graduate students and solved a multitude of problems throughout the building. Undoubtedly, he saved the department thousand of dollars with his in-house repairs and renovations.

Whether in his capacity of "Mr. Fix-it" or assisting students with processing equipment in "Food Preservation" or for their research, Jesse was the departments most widely known staff member.

In 1990 while carrying a non-working hood motor down from the roof, Jesse fell from the ladder, broke his back and pelvis, and lost two fingers. After a few months of recovery, he returned fully to his duties. He even, eventually, went up on the roof again, but he never attempted to carry a hood motor down. Jesse retired in 1996 and was looking forward to spending lots of time fishing at the beach.

Sarah Winn, the author of "Mr. Fix It" was a technician in the Food Science Department for 25 years. Since her retirement, she has pursued a career in creative writing. Her first novel The Silver Heiress was electronically published in July.

Equipment on Loan to Department

Alstom, Inc. of Monroe, NC is providing the department with a high pressure processing unit (12 liter capacity, up to 4000 atmospheres) from France that will be installed in our pilot plant in the near future. Researchers in the department will use the unit for studies on high pressure-induced pasteurization, gelation, and freezing-thawing of foods. High pressure has similar effects as heat on protein denaturation and microbial mortality without some of the accompanying flavor and color changes induced by heating. Additionally, water freezing point is depressed under pressure and different ice structures can be formed.

IFT Dogwood Section

The North Carolina regional section of IFT has adopted the name the **Dogwood Section**. The section was part of the North Carolina-Virginia regional section until they recently became independent. A spring meeting is planned for April 15th in Schaub Hall, and will be in conjunction with the Phi Tau Sigma annual meeting, the Don Hamann Memorial Lecture, and the Student Awards Banquet. If you would like to receive the group's newsletter, **Section Savorings**, or information, contact JoAnna Tharrington, secretary, at (919) 513-2090. Other officers for the group include Gary Greene, chair; Ken Swartzel, chair-elect; and Gregg Flynt, treasurer.

Food Rheology Shortcourse Set for May

A short course titled "*Rheological Analysis of Foods: Theory and Practice*" will be held May 19-21 in Raleigh in the Department of Food Science. The course is sponsored, in part, by the Southeast Dairy Foods Research Center. The program is designed to convey the basic concepts of food rheology and how rheological properties relate to food quality, stability, process design, and optimization. Links between rheological and sensory properties of foods will be covered. General lecture, hands-on laboratory exercises, and discussion of practical applications and case studies are included in the course structure.

The course is intended for industry, academic, and government scientists working with rheological and textural analysis of foods. It is applicable to scientists working in basic research as well as product development. Contact Dr. Christopher R. Daubert (919) 513-2092. chris_daubert@ncsu.edu

HAACP Training Courses

A Hazard Analysis Critical Control Points (HACCP) training course was held in Carteret County in November with thirty-three attendees receiving the Association of Food and Drug Officials certification. This is FDA recognized training by National Seafood HACCP Alliance instructors, David Green, Barry Nash and Donn Ward. Courses were also taught last year in Dare and New Hanover Counties with a total of sixty-nine attendees receiving certificates.

Graduate Fellowship Recognition Dinner

The NC State Graduate School sponsored the fifth annual Graduate Fellowship Recognition Dinner in September. Food science students receiving graduate fellowships were: Hany Girgis, US Dept. of Education Graduate Assistance in Areas of National Need, Biotechnology; Zhongjing Lu, Alumni Association International Student; Angela Johnson Birch, Dean's Fellowship; Jean Shaw, Joye Willcox and Jeff Cole, Institute of Nutrition; Arnie Sair, USDA National Needs.

SDFRC

The SDFRC continued its contract with Dairy Management Inc. and was awarded \$438,443 in DMI funding for 1999. Combined with the industrial funds garnered by the center, the total DMI and Industrial funds directed into research projects and personnel operating within the SDFRC is nearly \$855,000 this year.

Seafood Lab Establishes Advisory Committee

Anticipating opportunities for program development coinciding with construction of the Center for Marine Sciences and Technology (CMAST), the Seafood Laboratory has enlisted the services of key industry, consumer and academic persons to establish a lab advisory committee. The group which will act as a sub-committee of the Food Science Department's Industry Advisory Council consists of Greg Barnes, NC Farm Bureau; Murray Fulcher, South Point Seafood; Vera Gaskins, Carteret County Nutrition Leader; Jimmy Johnson, Washington Crab Co., Inc.; Betty Motes, Carteret County Nutrition Leader; Frank Thomas, NCSU professor emeritus; and Sam Thomas, Ocean Technologies. The IAC sub-committee will be jointly chaired by Jerry Schill, NC Fisheries Association and Roy Martin, National Fisheries Institute. The function of the committee is to assist lab personnel in setting programmatic goals consistent with industry and consumer needs, and to encourage support for educational programs and research efforts offered through CMAST.

An initial meeting of the lab advisory committee was held during an "open house" at the Seafood Lab in Morehead City on Friday, October 2. Groundbreaking for the 51,000 square foot CMAST facility was held on August 31. Completion is expected in early 2000.

CAPPS

With the expansion of CAPPS to three sites (NCSU, UC-Davis, and The Ohio State University), membership has increased, project focus has expanded, and more issues relative to aseptics are being addressed. Presently, CAPPS has 14 members and 13 active projects.

During the fall meeting in Raleigh, consensus was reached in a series of workshops on biovalidation of aseptic filling and packaging systems. The workshop was held on the NCSU Centennial Campus with approximately fifty participants from academia, government, and industry. Four areas of concentration: statistical analysis, cartridge filter sterilization, presterilization/resterilization, and packaging sterilization, were discussed. The manuscripts will be published on the web.

The spring CAPPS meeting will be held at UC-Davis on April 27-28. Members always look forward to a trip to Napa Valley when they meet in California!!

OPEN HOUSE

On October 3, the university held its annual Open House. This is an chance for potential students to gain information on university departments and is seen as a recruiting opportunity for the department. Kevin Keener, Robyn Reynolds, Monali Yajnik, Jon Allen, Pat Curtis, Lee-Ann Jaykus, Mark Cullison, Erica Balmer, Leon Boyd, Lynn Turner, Ken Swartzel, KP Sandeep, Beth McGlamery, Chris Pernell, Myke Rich, and Christopher Daubert represented the department. Melissa Taylor and JoAnna Tharrington helped update the department's promotional display.

FACULTY ACTIVITIES

Dr. Henry Fleming and **Mr. Brian Shofran** were recently featured in an associated press release regarding their findings on the benefit of the chemical *allyl isothiocyanate* found in horseradish and mustard oil. They believe there is evidence that these two condiments can serve as a food preservative, guarding against a host of contaminants such as *E. coli* and *Staphylococcus aureus* pathogens. Shofran, a former student of Dr. Fleming, works at Oklahoma State University.

Dr. Allen Foegeding gave an invited talk at the 4th International Conference on Hydrocolloids at Osaka City University in Osaka, Japan. His talk was titled "*A Comparison of the Gelling and Foaming Properties of Whey and Egg Proteins*." On December 10, he spoke to the Utah State University Department of Food Science about "*Understanding Texture Through Polymer Models and Rheology*." At the 5th Symposium Internacional De Ingenieria Bioquimica Y Tecnologia de Alimentos, at the University of Monterey, Queretaro, Mexico, he gave a presentation entitled "*Globular Protein Functionality: linking Colloidal and Polymer Properties with Food Applications*."

Dr. David Green gave invited presentations on "*Pfiesteria and Seafood Safety*" at the National Press Club in Washington, DC, in September, and the Marine Technology Society Annual Meeting in Baltimore, MD in November.

Dr. Todd Klaenhammer traveled to Arnhem, the Netherlands, in September, to present the keynote address at the European Dairy Experts Symposium "Dairying Behind the Dykes." His talk was titled "*Genetic Strategies to Control Bacteriophages Attacking Dairy Starter Cultures*." He also delivered the keynote address at the

"Functional Food Research in Europe" symposium in Haikko Manor, Finland, in October. The title of his presentation was "*Functional Food Science in the U.S.A.*"

Dr. Tyre Lanier and a former student, **Dr. Jae Park**, of Oregon State University traveled to Paris, France, on February 2, to teach a European surimi school. In November, Dr. Lanier spoke at the Seafood Science Technology meeting in St. Croix, V.I. about the work his lab has done on the transglutaminase binding of seafoods and proteolytic degradation of tuna texture.

Dr. Harold Swaisgood served on the scientific advisory committee and presented the keynote address at the first International Symposium on Enzymatic Protein Processing. The symposium was held in December in Noordwijkerhout, the Netherlands. Dr. Swaisgood's talk was "*Design of Recombinant Enzymes for Preparation of Bioreactors Used for Protein Modification*." In February, he served as a team member in a CREES review of the Department of Food Science at the University of Rhode Island, Providence.

Dr. John Rushing was the guest lecturer for the inaugural C. Walter England Dairy Technology Lectureship at the University of Maryland held in late '98. The lecture, which reminded dairy processors that they still need to be mindful of old-fashioned basics, was titled "Optimizing the Shelf Life of Fluid Milk." It was presented during an HTST Pasteurizer short course on the College Park campus.

Drs. Todd Klaenhammer and **Allen Foegeding** attended the DMI sponsored Whey and Milk Powder forum held in December in Park City Utah. The center directors from the SDFRC, California Dairy Center, and the Wisconsin Center were involved in the overall program organization. Dr. Foegeding was invited to present a lecture on "*Whey Functionality and Utilization*". The objective of the forum was to define the current state of science in the field and then identify future directions for research and development.

There were brief moments outside the forum for some relaxation . . .



STUDENTS & STAFF

Greg Bolton, of Sanford, NC, joined the FS Seafood Laboratory in Morehead City, in September, as a seafood technologist. While there, he will work on applied research projects and provide technical assistance for industry service requests in HACCP verification. Greg, a 1994 graduate of the department, is completing his Masters of Science degree in Food Science under the direction of Dr. Tim Sanders.

Barry Bright joined the department as bookkeeper in January. He has an associate degree in accounting and business administration from Central Carolina Community College in Sanford, NC, and worked as a bookkeeper for Sanford Contractors the past 12 years.

Dr. I.S.Kang, a scientist visiting Dr. Tyre Lanier's lab from AMPC Inc., Ames IA, traveled to British Columbia, in February, to present his work on protease inhibition in fish meat.

Dr. Cheon J. Kim, professor of animal science from Kon Kuk University in Seoul, Korea, has recently arrived to work in Dr. Lanier's lab. He is expected to be visiting for about a year, working on a project to improve the quality of frozen pork products to aid our pork processors who are now heavily involved in export markets.

Thomas Mease joined the department as the accounting clerk for the dairy plant in October. He earned a Master of Music at ECU, has taught band, gives music lessons at home, and worked for Blue Cross-Blue Shield before coming to food science. As a member of the Raleigh Flute Choir, he has performed at the White House three times.

Carey Walker, who has worked in the department as a research assistant since 1990, completed his Ph.D. work in Microbiology and is moving March 1 to Switzerland where he will take a position as a research scientist in Nestles Central Research Center.

Rosemary Sanozky-Dawes, who worked with Todd Klaenhammer's group from 1983 until 1988 on bacteriophages, has returned to Food Science as a research technician. She came back to her same "lucky" bench and is currently working away with new bacteriocins produced by lactobacilli. Welcome Back!

Soren Madsen, a visiting Ph.D. student from the Biotechnology Institute of Denmark, joined Dr. Klaenhammer's group in November to develop a new inducible gene expression system for lactic acid bacteria.

Food Science Alumni Society

The newly formed Food Science Alumni Society held their first function on February 20 in Schaub Hall. Dr. Dan Carroll presented an overview of wine making, wine tasting and factors affecting wine quality. Dr. Todd Klaenhammer gave an inside look at the National Dairy Foods Research Program.

The society is open to anyone who has attended a class associated with a degree program or has been on the faculty or staff of the department. The meetings are seen as an opportunity for alumni to visit with friends, keep up with developments in the department, and gain useful information on a wide variety of subjects.

Officers were elected at a meeting held in October '98. Rick Early, of M.G. Newell, president, Gary Cartwright, food science pilot plant, vice-president, and JoAnna Tharrington, food science research technician, secretary/treasurer.

Soren works under the direction of Hans Israelsen in the Department of Microbiology Denmark. He will be here through July 1999.

ALUMNI

Jill Brindisi (M.S. '98) is working in the Quality & Regulatory Operations group with General Mills in Cedar Rapids, Iowa.

Sharon Brogan (B.S. '96) is in her second, and final, year at the Culinary Institute of America in New York, NY with the hope of becoming a professional chef by next summer.

L. Mark Hanover (M.S. '72) is currently Director of Food Ingredient Technical Service, R&D with A.E. Staley Co. in Decatur, IL. He has been with them for 21 years.

Sehr Jangda (B.S. '98) is currently pursuing a graduate degree in nutrition at East Carolina University.

Jeff Kissell (B.S. '96) is working as a chemist for Novartis Pharmaceuticals in Suffern, NY.

Steve Tacey (B.S. '83) works as Microbiology Supervisor for The Body Shop in Wake Forest, NC

Chris Whitley (B.S. '97) has worked, since graduating, at Carolina Turkeys as a R&D Development Technologist.

Food Science Making a Presence on the Internet with Distance Education

The Food Safety website was designed by Dr. Pat Curtis and Melissa Taylor to promote food safety education via the Internet. The site averaged 2,124 hits a day between January and August 1998. On August 31, 1998, a few days after Hurricane Bonnie hit the NC coast, the site received 40,502 hits in one day. It is also referred to as the Food Safety Information Retrieval System and is broken down into ten main categories. Users can search by commodity, bacteria, hot topics, or food safety resources.

Melissa receives e-mail, almost daily, from users of the site and has answered food safety inquiries from all over the world. She feels that the site is especially popular for county extension agents and consumers because they can look up information they have heard about on their local news or a national program.

Associated with the Food Safety Web site are two on-line courses aimed at serving the food industry. The Food Law and Regulations course is delivered to students at NC State, Wayne State University, and Clemson, while modules have been used by University of Wisconsin - River Falls and University of Maine. This course was developed by Dr. Pat Curtis and Wendy Jackson.

A new Hazard Analysis Critical Control Point System (HACCP) course at NC State delivers a series of learning modules associated with the modernization of USDA's meat and poultry inspection system.

You can access these websites from the main food science departmental website at www.cals.ncsu.edu/food_science

Don Hamann Memorial Lecture Thursday, April 15

Food Science News is produced in the NCSU Department of Food Science for alumni, friends, faculty, students & others interested in departmental activities. Comments, personal & professional updates from alumni, and address corrections and additions/deletions should be sent to:

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Food Science Club Update

by Erica Balmer, FSC President

The Food Science Club has had a productive year, thus far. The beginning of the academic year involved welcoming new students. FSC held a new student luncheon and co-sponsored the annual Fall Kickoff BBQ with the department and the Dogwood Section of IFT. As a result of the warm sunny weather, our annual Dairy Bar fundraiser at the NC State Fair was a tremendous success! The profits allow the club to sponsor student scholarships and activities, and to provide for professional development of members. NC State Wolfpack fans from food science have shown their athletic support by attending club sponsored tailgates and university football and basketball games. Inspired by these events, the food science department now has a skilled intramural basketball team.

The halloween party brought out over 80 participants with Dr. Brian Farkas and Heather Hudson of food science taking home the top prizes in the costume contest. To test their skills in balance and coordination, students, faculty, and staff took an exam break in December to go ice skating. Our monthly business meetings have featured presentations by Kellogg's, Pillsbury, Nabisco, General Mills, M&M Mars, Frito Lay, and Cryovac. Faculty and alumni have also attended student meetings to present information related to personal and professional development, job placement, interviewing, and networking skills.

Spring semester events include the wine & cheese tasting held at Gallery C in February, as well as the spring picnic to be held at the end of April. The annual awards banquet will be held at Four Points Hotel on April 15th. This event will be held in conjunction with the North Carolina IFT meeting, Phi Tau Sigma inductions, and the industry advisory council meeting. NCSU will be hosting the southeast area IFTSA College Bowl competition on Saturday, April 10. For additional information concerning the Food Science Club, access the FSC webpages at

<http://www.cals.ncsu.edu/>

[student_orgs/foodsci/home.html](http://www.cals.ncsu.edu/student_orgs/foodsci/home.html)

The Food Science Club general business meetings are held on the first Tuesday of each month at 6:00pm in Room 105 Schaub Hall (dinner is served at 5:30pm). The remaining meetings will be held on March 2nd and April 6th. We welcome all students, faculty, staff, alumnae, industry representatives, and visitors.